CAREER: Microscopic Study of Light Localization

Hui Cao, Northwestern University, DMR-0093949

Light scattering is a common phenomenon, occurring in clouds and human tissue. One extraordinary phenomenon is Anderson localization of light, namely light can be "frozen" in strongly scattering media due to multiple scattering and interference. We present a microscopic image of light localized in semiconductor nanoparticles.

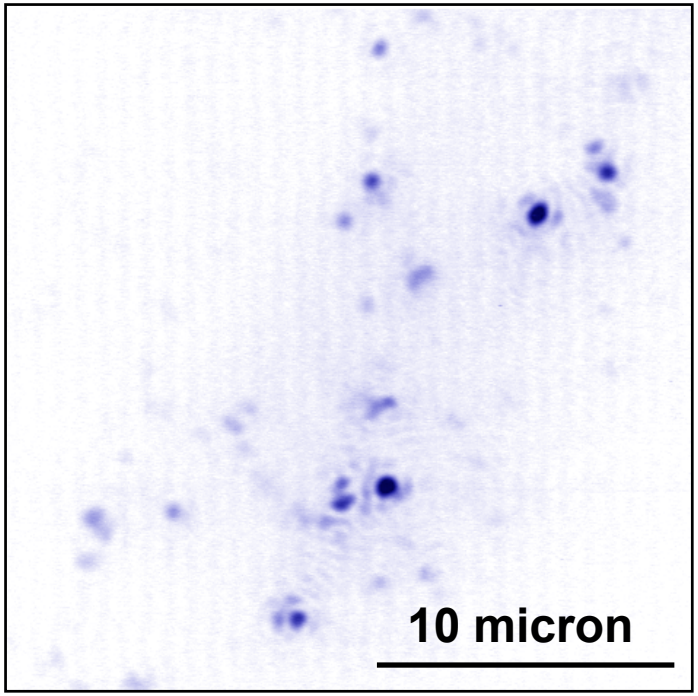

Image of spatial distribution of emitted light intensity inside ZnO nanoparticles. The average particle size is 100 nm.

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Education:

Three graduate students (Gilbert Chang, Eric Seelig, Xiaohua Wu), and one postdocs (Alexey Yamilov) contributed to this work. Eric Seelig received his Ph.D. in Febrary 2003, and obtained a permanent research position in industry. Gilbert Chang received his Ph.D. in July 203 and is presently a postdoc at Argonne National Laboratory.

Outreach:

PI participated in the REU program. One undergraduate student worked in PI's lab during the summer of 2003. PI also incorporated her current research into a new Material World Module designed by Northwestern Materials Research Center for high school students.